

Evaluation of the variability of sediment and nutrient loading into Nueces Bay

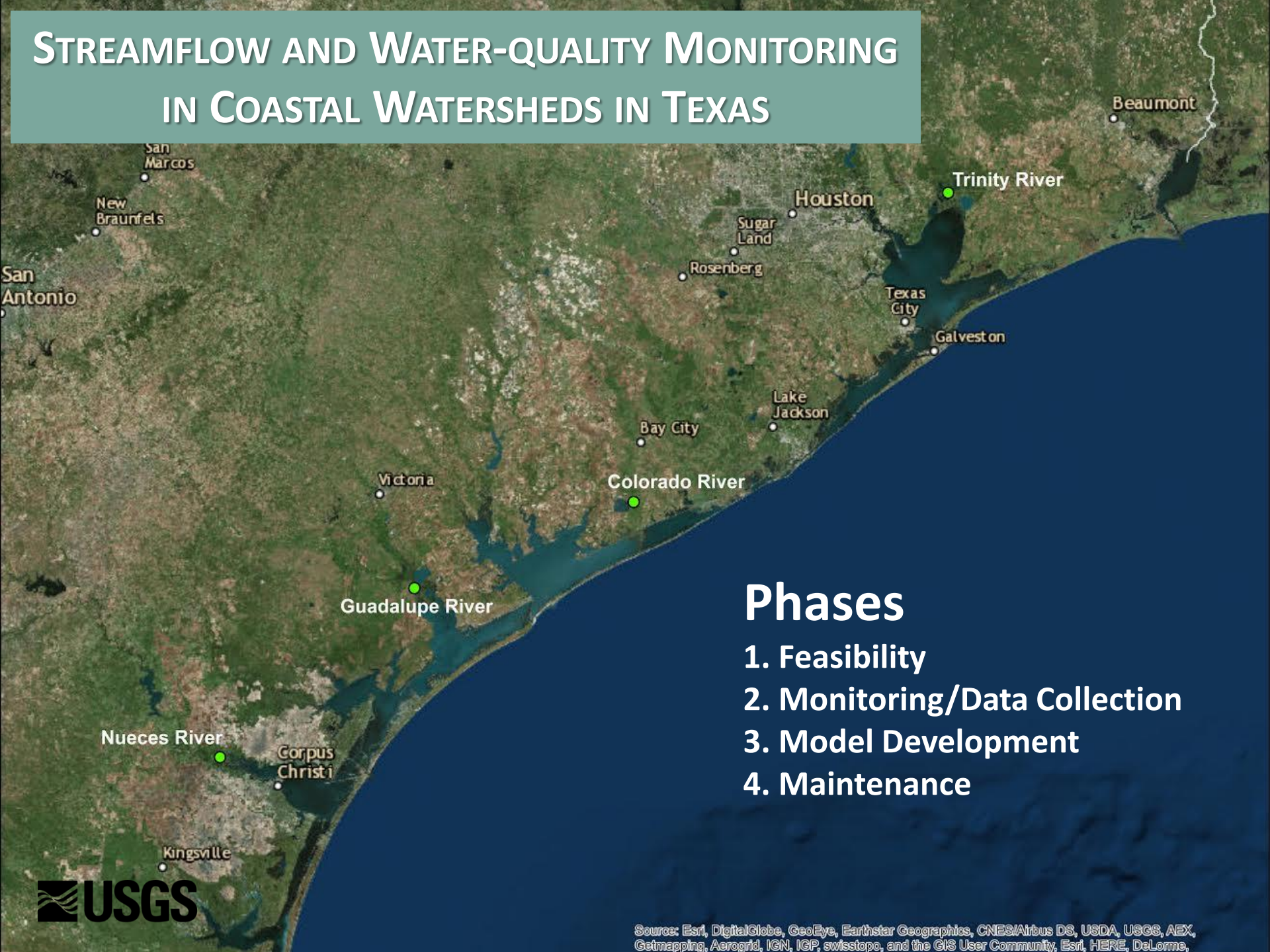
May 1, 2017

U.S. Geological Survey
Texas Water Science Center
South Texas Program Office

Texas Water
Development Board



STREAMFLOW AND WATER-QUALITY MONITORING IN COASTAL WATERSHEDS IN TEXAS



Phases

1. Feasibility
2. Monitoring/Data Collection
3. Model Development
4. Maintenance



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme,

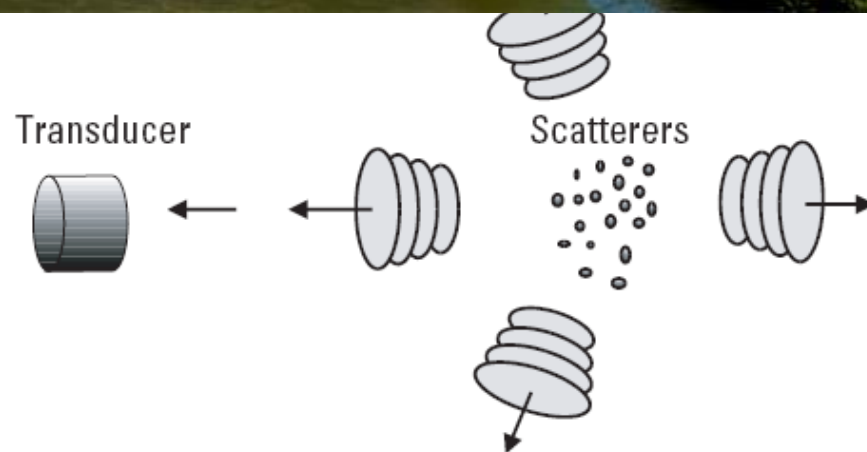
PROJECT TASKS

- Collection of streamflow and water-quality data in the Nueces River
 - Various Conditions
 - Emphasis on High Flow
 - Nutrient and Suspended-Sediment Concentrations
 - Periodic Sampling
 - Physical Properties
 - Water-quality monitor
 - Streamflow Measured during Sampling
 - Attenuation/Backscatter from ADVM

ACOUSTIC BACKSCATTER

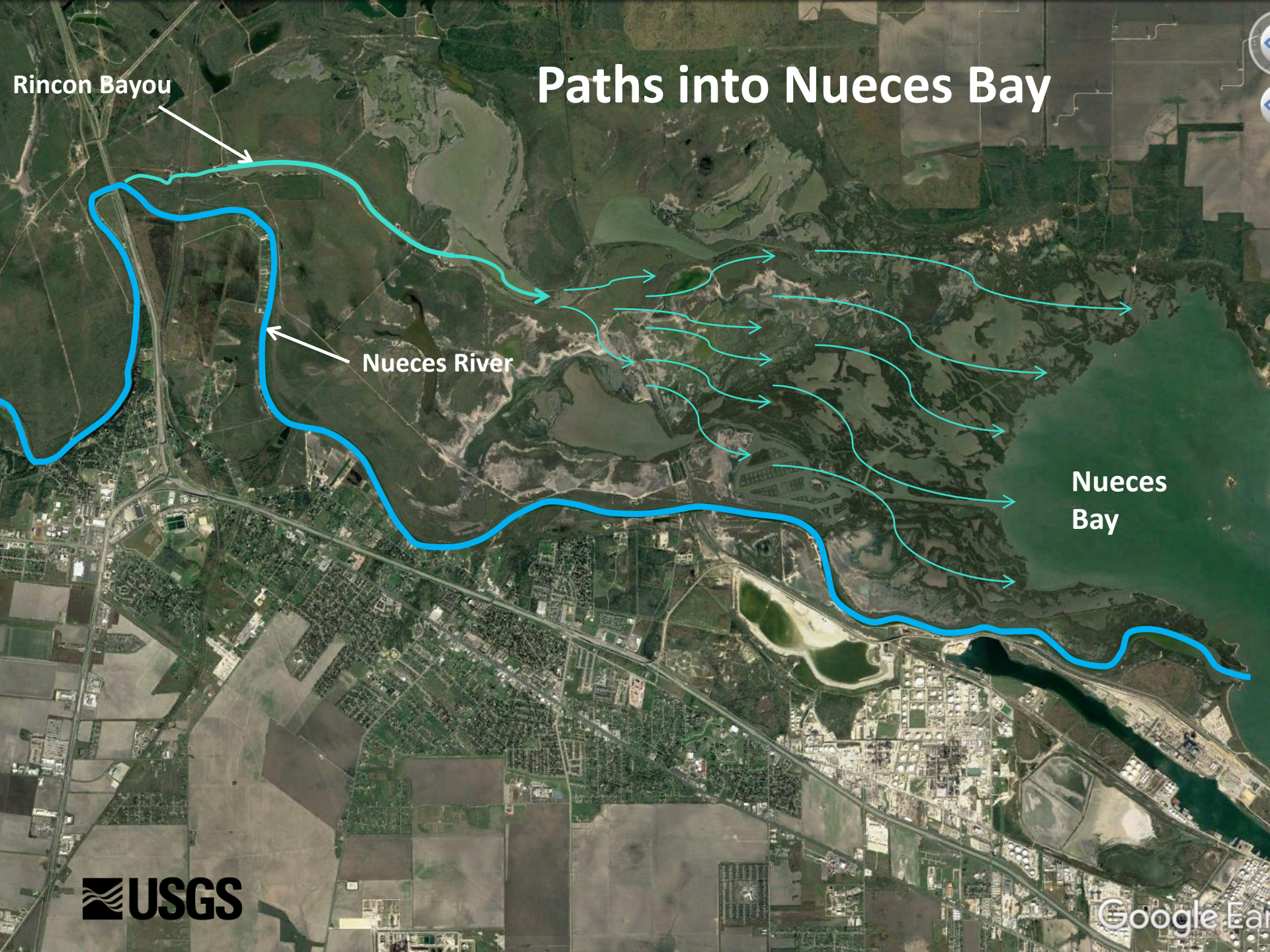


water-sediment mixture will scatter and attenuate as a function of fluid, sediment, and acoustic instrument characteristics.



PROJECT TASKS

- Recommend location(s) for establishing permanent monitoring station to continuously measure sediment and nutrient concentrations entering Nueces Bay.

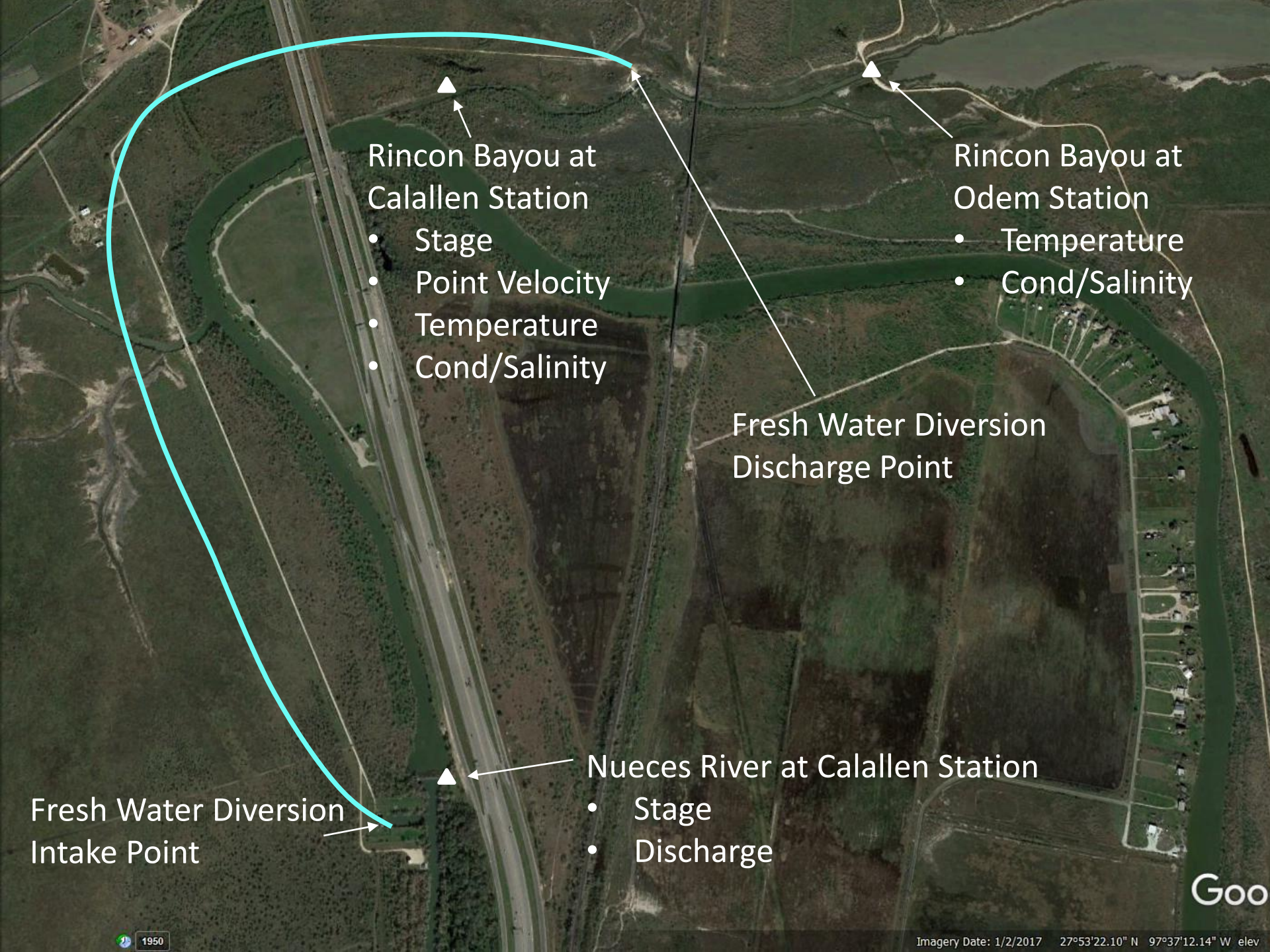


Rincon Bayou

Paths into Nueces Bay

Nueces River

Nueces Bay



Rincon Bayou at
Calallen Station

- Stage
- Point Velocity
- Temperature
- Cond/Salinity

Rincon Bayou at
Odem Station

- Temperature
- Cond/Salinity

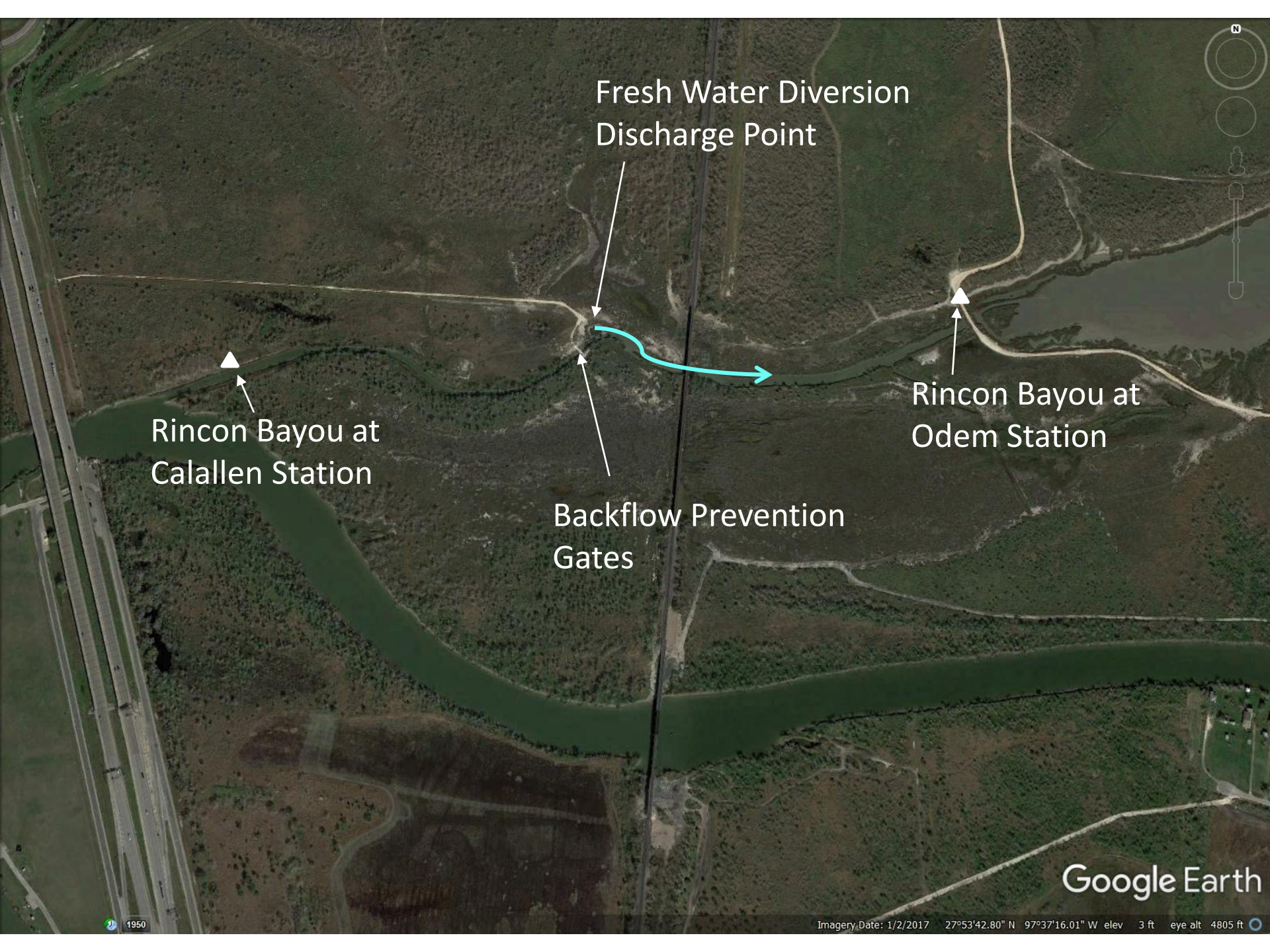
Fresh Water Diversion
Discharge Point

Fresh Water Diversion
Intake Point

Nueces River at Calallen Station

- Stage
- Discharge

Goo



Fresh Water Diversion
Discharge Point

Rincon Bayou at
Calallen Station

Rincon Bayou at
Odem Station

Backflow Prevention
Gates

Google Earth

PROJECT TASKS

- Progress to date
 - Reconnaissance completed
 - 2 Sampling Locations Selected
 - Nueces River at Hwy 37 (high-flows)
 - Rincon Bayou below Diversion Discharge (low- to mid-range flows/diversions)
 - Recommendations for gage relocations completed
 - 3 low-flow samples collected at the 2 sites in September 2016
 - 3 discharge measurement made
 - Conditions have not been favorable for high-flow samples

Proposed High-Flow
Sediment Sampling Site

Rincon Bayou at
Calallen Station

Rincon Bayou at
Odem Station

Proposed Low-Flow/Diversion
Sediment Sampling Station

Hondo Creek

Nueces River at Calallen Gage

Goo

WHAT'S NEXT?

- Collection of more samples especially during high-flow events
- Look for correlations between backscatter data and sediment
- Move current gages to proposed sampling locations

QUESTIONS?

Texas Water
Development Board



 **USGS**
science for a changing world